

## PCT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C. 20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 02 November 1999 (02.11.99)	
International application No. PCT/SE99/00179	Applicant's or agent's file reference 980024pc
International filing date (day/month/year) 11 February 1999 (11.02.99)	Priority date (day/month/year) 11 February 1998 (11.02.98)
Applicant LINDSKOG, Nils et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

08 September 1999 (08.09.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Jean-Marie McAdams Telephone No.: (41-22) 338.83.38
---	--

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 980024PC	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/SE99/00179	International filing date (day/month/year) 11.02.1999	Priority date (day/month/year) 11.02.1998
International Patent Classification (IPC) or national classification and IPC7 C03B 7/07, C03B 7/098		
Applicant KANTHAL AB et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  08.09.1999	Date of completion of this report  08.05.2000
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer  Mattias Arvidsson/MP Telephone No. 08-782 25 00

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/00179

## I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

- ☒ the international application as originally filed.
- ☐ the description, pages \_\_\_\_\_, as originally filed,  
 pages \_\_\_\_\_, filed with the demand,  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the claims, Nos. \_\_\_\_\_, as originally filed,  
 Nos. \_\_\_\_\_, as amended under Article 19,  
 Nos. \_\_\_\_\_, filed with the demand,  
 Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
 Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the drawings, sheets/fig \_\_\_\_\_, as originally filed,  
 sheets/fig \_\_\_\_\_, filed with the demand  
 sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
 sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/00179

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-11</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-11</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims		NO

**2. Citations and explanations**

The invention relates to a method and an equipment for equalising temperature differences in molten glass in at least one temperature equalising zone, in the form of a channel, intended to transport a glass melt. Resistor heating elements are provided in the temperature equalisation zone walls, bottom and roof.

The following documents are cited in the International Search Report:

D1: US 4622059 A  
D2: DE 3528332 A1  
D3: US 4655812 A

Cited document D1 relates to an apparatus for controlling the temperature in and thermally conditioning molten glass within a forehearth.

Cited document D2 relates to a method and an apparatus for electrically heating a channel intended for transporting a glass melt.

Cited document D3 relates to a forehearth for a glass furnace, including electric heating elements positioned in bores in the roof blocks.

None of the cited documents includes that resistor heating elements are provided in the temperature equalisation zone walls, bottom and roof, and that the temperatures of said walls, bottom and roof are caused to be measured and controlled by an electric controller, which the application does.

.../...

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE99/00179

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V.

With the apparatus and method described in the application a glass melt with more uniform temperature than with conventional apparatus and methods is provided, this in turn provides a substantial increase in yield of the product to be manufactured.

Thus, the claimed invention is novel, is considered to involve an inventive step and to have industrial applicability.

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification<sup>6</sup>:

C03B 7/07, 7/098

A1

(11) International Publication Number:

WO 99/41206

(43) International Publication Date:

19 August 1999 (19.08.99)

(21) International Application Number: PCT/SE99/00179

(22) International Filing Date: 11 February 1999 (11.02.99)

(30) Priority Data:

9800397-3

11 February 1998 (11.02.98)

SE

(71) Applicant (for all designated States except US): KANTHAL  
AB [SE/SE]; P.O. Box 502, S-734 27 Hallstahammar (SE).

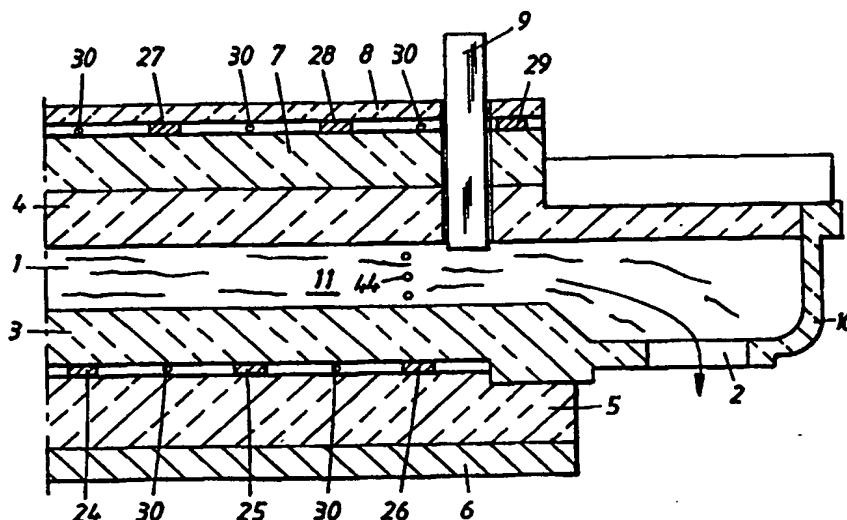
(72) Inventors; and

(75) Inventors/Applicants (for US only): LINDSKOG, Nils  
[SE/SE]; Dolomitvägen 14, S-734 37 Hallstahammar  
(SE). BUETTIKER, Paul [CH/US]; 114 Harvest Drive,  
Charlottesville, VA 22903 (US).(74) Agent: NORÉNS PATENTBYRÅ AB; P.O. Box 10198, S-100  
55 Stockholm (SE).(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR,  
BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK,  
MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU,  
ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG,  
ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI,  
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent  
(BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE,  
SN, TD, TG).

Published

With international search report.

(54) Title: METHOD FOR EQUALIZING TEMPERATURE DIFFERENCES IN MOLTEN GLASS, AND EQUIPMENT THEREFOR



## (57) Abstract

Method for equalizing temperature differences in molten glass in at least one temperature equalization zone in the form of a channel (1) intended for transporting a glass melt, said zone being located upstream from a tapping point (2) at which the glass is tapped into a mould in a forming machine or the like. The invention is characterized in that resistor heating elements (16-19; 18, 19; 24-29) are provided in the temperature equalization zone walls (12, 13), bottom (14) and roof (15), and in that the temperatures of the surfaces of the respective walls, bottom and roof in contact with the resistor heating elements are caused to be measured, and in that said resistor heating elements are caused to be controlled by an electric controller (31-34) so that the temperatures of said surfaces are caused to be equal or largely equal to a predetermined tapping temperature of the glass melt.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon	KR	Republic of Korea	PL	Poland		
CN	China	KZ	Kazakhstan	PT	Portugal		
CU	Cuba	LC	Saint Lucia	RO	Romania		
CZ	Czech Republic	LI	Liechtenstein	RU	Russian Federation		
DE	Germany	LK	Sri Lanka	SD	Sudan		
DK	Denmark	LR	Liberia	SE	Sweden		
EE	Estonia			SG	Singapore		

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 99/00179

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: C03B 7/07, C03B 7/098

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: C03B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4622059 A (GEORGE W. BROWN), 11 November 1986 (11.11.86), whole document  --	1-11
A	DE 3528332 A1 (SORG-GMBH & CO KG), 12 February 1987 (12.02.87), whole document  --	1-11
A	US 4655812 A (JOHN F. BLUMMENFELD), 7 April 1987 (07.04.87), whole document  -- -----	1-11

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

19 May 1999

Date of mailing of the international search report

24 -05- 1999

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Ulf Nyström

Telephone No. +46 8 782 25 00



# INTERNATIONAL SEARCH REPORT

Information on patent family members

03/05/99

International application No.

PCT/SE 99/00179

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	4622059	A	11/11/86	NONE	
DE	3528332	A1	12/02/87	NONE	
US	4655812	A	07/04/87	AU 577714 B	29/09/88
				AU 6403486 A	07/04/87
				EP 0236486 A,B	16/09/87
				JP 63500937 T	07/04/88
				WO 8701691 A	26/03/87